

## CLAIMS:

1. A hydrogen storage material comprising magnesium hydride, wherein the magnesium hydride is stabilized in the fluorite crystal structure.
2. A hydrogen storage material according to claim 1, characterized in that the magnesium is at least partly substituted by an element such that the magnesium hydride is stabilized in the fluorite structure.  
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3. A hydrogen storage material as claimed in claim 2, characterized in that the element comprises an ion with a size that is similar to the size of Mg<sup>2+</sup> in a VIII coordination.  
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4. A hydrogen storage material as claimed in claim 2, characterized in that the element comprises an ion with a radius in the range of 0.090-1.120 nm.
5. A hydrogen storage material as claimed in claim 2, characterized in that the element comprises an ion selected from the group comprising Sc<sup>3+</sup>, Ti<sup>3+</sup>, RE<sup>3+</sup> (Rare Earth elements), Y<sup>3+</sup>, Li<sup>+</sup>, Zn<sup>2+</sup>, Co<sup>2+</sup>, Fe<sup>2+</sup>, Mn<sup>2+</sup>, In<sup>3+</sup>, Zr<sup>4+</sup>, and Hf<sup>4+</sup>.  
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6. A hydrogen storage material as claimed in one or several of the preceding claims, characterized in that it comprises an amount of a catalytically active material.  
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7. A hydrogen storage material as claimed in one or several of the preceding claims, characterized in that the catalytically active material comprises at least one metal selected from the group consisting of Ir, Ni, Pd, Pt, Rh, and Ru.
- 25 8. A hydrogen storage material as claimed in one or several of the preceding claims, characterized in that the catalytically active material comprises palladium or rhodium.
9. An electrochemically active material, characterized in that the material comprises a hydrogen storage material as claimed in one or several of the claims 1 to 8.

10. An electrochemical cell at least comprising a positive electrode and a negative electrode, characterized in that the negative electrode comprises a hydrogen storage material as claimed in one or several of the claims 1 to 8.

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11. Electronic equipment powered by at least one electrochemical cell, characterized in that the at least one electrochemical cell is an electrochemical cell as claimed in claim 10.